

ASD Weekly Highlights for the Week Ending 15-Sep-2006

Operations

- There was no beam operation from September 9 through 15. Therefore Operations recorded 168 hours of Programmed Shutdown,
- Andy Arvin is working with the Ion Source Group
- Saul Matovu, Charles Peters, Vaughn Patiana and Roger Housman are working on Datastream.
- David Brown is working with Diagnostics and Controls
- Jennifer Kozak is working on Controls Screens and scripts.
- Bill Krapf is working with Ted Williams on Training
- Louis Rupp, Zafer Kurson, Ben Sanchez, Nic Luciano and Larry Longcoy are staffing shifts

Accelerator Physics

- Accelerator physics is progressing on tasks aimed at streamlining beam physics studies and loss accounting. This includes developing new applications to automate tasks and movement/addition of loss monitors to better detect beam losses near activated regions.
- A visit from the CCG vacuum gauge manufacturer revealed a previously unknown design feature of a sharp edge field emission collar meant to decrease the response time at ultra low vacuum. Any perturbations in the sharp edge could easily lead to arcing in the gauge, as suspected from suspicious signals observed. This insight has decreased the confidence in the use of CCGs in the SCL region, and caused acceleration of alternative coupler protection schemes (e.g. arc detection).
- The short term plan for the ring injection dump beam line calls for new stripper foils that are bigger and thicker than the old foils. These new foils will intercept almost all the incoming H- beam, thus allowing the injection dump beam line to be tuned up to transmit just one beam (H0). The fraction of H0 particles will also be reduced with the increased thickness of the foils. The foils should be ready to install around the end of October.
- The long term plan will probably involve some magnet and/or vacuum changes. We are now working to develop a detailed model that will allow us to determine the optimum set of changes.

RF Systems

Ring RF

- Software to operate the Allen Bradley local control Touch-Screen panel replacements for the failed RediPanels is complete and ready to test. The

system will have cooling water available next week and we will complete an operational test.

- Amplifier/cavity parameter measurements should begin next week as cooling water becomes available.

Ion Source

Instrumentation and Controls

- The Accel1 server and the CCR OPIs were upgraded this week as scheduled. IOCs had to be rebooted and some applications needed personal attention, but the system was fully operational at week's end.
- Software was tested to periodically test arc detectors without disturbing RF operations.
- A report that lists all available controls database applications was made available on the "ROCS" section of the Controls Website.
- Two new Ring HPRF PanelView units have been installed. These units do not have the standard Ethernet interface. Controls (buttons) are working, however the readback cannot be tested until cooling water is reestablished next week.

The following PPS CF Stack monitor alarms have been added to the Alarm announcer.

- CF_ST:SFM_Rad_H:Alarm "CEF Stack Monitor Alarm"
CF_ST:SFM_Rad_H:Alert "CEF Stack Monitor Alert"
CF_ST:SFM_Rad:Fail "CEF Stack Monitor Failure"
PPS_Tgt:Stack_Mon1:RCH2_MRH "CEF High Background Radiation"
PPS_Tgt:Stack_Mon1:Rad "CEF Stack Monitor High Radiation"
- The Proton Beam Window vacuum pump control system interface is being modified to indicate a fault upon loss of AC power. Parts are on order and we hope to be able to implement the modification during this shut-down period.
- Cable for the insulating vacuum system is being pulled to the tunnel from the new vacuum racks. Drawing for turbo pump cable terminations is 95% complete, and pump connectors are ordered and expected imminently.
- Work continues in the test cave. The vacuum PLC is installed with code 90% complete. Cables from gauge and pump controllers to the PLC are built and will be installed, along with gauge and pump controllers, next week PPS integration in the test cave continues.
- The PID gains on the FE chiller for RFQ were retuned to run stably @ 20Hz rep rate. The Beckhoff thermocouple module that failed, causing all the DTL 4 drift tube temperatures not to read, has been repaired.

- The target moderator application has been fully converted to EPICS 3.14.8.2 on the development server. All screens, data base files, and scripts have been tested and verified to operate properly. Two test PLCs were connected to the IOC to verify that the IOC correctly connected to both PLCs. (We had a problem with this in the CHL.) The alarm configuration file does not change since it is independent of the EPICS version. Its operation should not be affected.
- Support continued to be provided for installing vibration sensors for the mercury motor/pump bearings, and for troubleshooting the pedestal manipulator hoist.
- A number of activities related to target instrumentation are underway. Preamplifiers and high resolution digitizers for the Target Gamma Monitor upgrade have been received and bench tested. Software issues with the digitizer drivers were discovered and should be resolved by the vendor by the end of the month. A conceptual layout of the optical system for the Target viewscreen, and modifications to the proton beam window assembly have been incorporated into the drawing package and shipped to the vendor for comment. Faculty members at University of Maryland have begun calculation of transition radiation yield. They will attempt to compare this to background from protons on helium. All hardware and electronics for the Allison emittance scanner has been fabricated and manually tested. Software integration will be started in a few weeks. Sources of high frame rate cameras for neutron imaging have been identified. Scintillator materials will be selected and photon yields estimated in the coming months. Finally, J. K. Zhao and T. Shea visited the polarized target group at the University of Virginia. Areas of technical overlap between polarized neutron instruments and accelerators were identified, and areas of potential collaboration discussed.

Diagnostics

- **BCMs:**
In order to accommodate the 10 Hz data acquisition during October run, we split the PC housing four MEBT and DTL1 and DTL2 BCs. The work is complete.
- **Electron Detectors:**
Vacuum group installed three electron detectors in the ring for us. With the exception of the injection electron detector, the rest are installed. We only have one prototype electronics for the October.
- **BPMs:**
Vacuum group and Craig Deibele fixed the bad BPM electrode feedthroughs in the HEBT, Ring and RTBT. SCL BPM electronics were overheating and causing glitches in the data. The source of overheating was the location/lack

of fans. Jeff Bryan, the new technician has modified one BPM rack. Remainder will be fixed as we purchase more fans.

- SCL Laser:
Alignment group is measuring the location of all optics. We will use the data for our online model.

SRF Facility

SRF Task Force

Survey and Alignment

Cryo Systems

Mechanical Systems

Electrical Systems

Modulators:

- Completed installation of Rogowski probes in all modulator systems in Klystron Gallery
- Tested installations in DTL and CCL modulators. Tested installations in SCL-Mod1 through -Mod9. Some problems were discovered with Rogowski installation and/or modulators which will be corrected in the coming weeks. Acquired extensive baseline data on tested systems.
- Visited Stangenes Industries for training on transformer assembly procedure, review of transformer progress. New design utilizes series-connected secondary to achieve required leakage inductance and oil as inter-winding insulation media. Projected ship date is now September 22nd. Picture attached.
- Began removal of DTL-Mod1 prematurely due to discovery of asymmetrical IGBT currents on C phase. Investigation of source of problem on-going. Completed transformer disassembly to get parts to local machine shop for modification to support Stangenes transformer installation.
- Disassembled both MEBT chopper structures. Bonded delaminated PCB to aluminum plate. Cleaning/etching to begin next week.
- Completed AC wiring for HVDC power supplies in test cage area in PS shop area.
- Removed/repaired LEBT chopper power supplies.
- Ordered additional spare IGBTs as well as evaluation next-generation IGBT modules.

Power Supplies

- Supported the vacuum group effort to upgrade the pump system for the cryomodels by pulling cables, hanging cable tray, etc.
- Repaired a faulty Klaxon connection on Injection kicker H02 magnet
- Supported the mechanical group effort by removing the water pumps in the basement of the ring service building and replacing them with new ones
- Supported the survey and alignment crew by locking out select power supplies in the SCL section of the Klystron gallery.

Electrical Shop:

- Finish RN-SS4 Cir.#2 AC Panel Maintenance
- Repair CCG 19B in LINAC Tunnel
- Install and Program Differential Pressure Transducers for HEBT DI Water System
- Completed Gauss Probe Measurements on IDmp_DCD_01 and IDmp_DCS_01 Power Supplies in Injection Dump.
- Completed Diagnostic Cable Pulls in the following areas: HEBT Scrapers / CCL Bunch Shape Monitor / Laser Scanner System
- Tie in Front End UPS Circuits for Ion Source Vacuum Racks
- Repair Klaxon on Injection Kicker H02
- Completed Target Gas Analyzer System for Ron Battle
- Completed Air Flow Monitoring System in HUR for Target.

Electrical Distribution:

- Placed purchase order to purchase replacement UPS unit (KL-2UPS1).
- Continuing with electrical panel maintenance on RN-SS4.
- Reviewed electrical utility requirements for Chopper Cage in Target Building.
- Prepared DCN sketch for Instrument relocation on Tower Water System in Target Building.
- Attended UL Electrical Equipment Evaluation training
- Reviewed DCN for CLO C-156 poke through receptacles addition.
- Reviewed Target Building As-built Panel Schedules.
- Completed UPS power outages should be complete by 1 pm on September 15, 2006
- Completed 17 DCN drawings for the CLO emergency power for preliminary review.
- Analyzed the use of the Oracle/Relational database to manage electrical distribution systems' panels/breaker information plus connected devices, and have a searchable database.